

Applicant: Junichi ITO
Application No.: 10/771,705

IN THE DRAWINGS

The attached sheets of replacement drawings includes changes to Figures 6, 9, and 13 to correct the mislabeled elements noted in the Office Action.

REMARKS

After the foregoing amendment, claims 1, 5, 9, 12, and 14-16 are pending in this application. Claims 1, 5, 9, 12, 14, and 15 have been amended, claim 16 has been added, and claims 2-4, 6-8, 10, 11, and 13 have been cancelled, without prejudice. Claim 1 has been amended to further define the claimed invention, and support for this amendment is found at pg. 51, lines 10-18, of the specification and Figure 16. Claim 5 has been amended to substantially incorporate the limitations of original claim 8. Claim 9 has been amended to further define the claimed invention. Claim 12 has been amended to substantially incorporate the limitations of original claim 13. Claims 14 and 15 have been amended to be in independent form. New claim 16 substantially incorporates the limitations of original claims 9 and 10. The specification and drawings have been amended to correct grammatical or typographical errors, including those noted in the Office Action. Applicant submits that no new matter has been introduced into the application by these amendments.

Objections to the Specification

The Examiner objected to the specification as minor errors. In response to this objection, Applicants have reviewed the specification and made the foregoing amendments to correct typographical errors, including the errors noted on pg. 3 of the Office Action. Withdrawal of the objection to the specification is respectfully requested.

Objections to the Drawings

Figures 6, 9, and 13 of the drawings have been objected to as containing mislabeled element numbers. Applicants have submitted the attached replacement sheets of drawings in accordance with the Examiner's remarks in response to these objections. Withdrawal of the objection to the drawings is respectfully requested.

Claim Rejections

1. 35 U.S.C. § 102(B) (Akio)

Claims 1, 5, 8, 9, 12, and 14 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Published Application No. 07-151946 (Akio). Based on the foregoing claim amendments, it is believed that this rejection applies to pending claims 1, 5 (which includes the limitations of original claim 8), 9, and 14 (which includes the limitations of original claim 12).

a. Independent Claim 1

Claim 1, as amended, recites, in pertinent part, that the imager apparatus includes "a vibration-time setting unit which sets, when the photographing-mode setting unit sets the photographing mode to a continuous photographing mode, a first time as the predetermined time for a first photographing operation, and a second time as the predetermined time for each of subsequent photographing operations from a second photographing operation onward, wherein the vibration-time setting unit sets the first time to time longer than the second time." This is described in the paragraph at pg. 51, lines 10-18, of the specification which discloses that in the continuous

photographing mode, the time for the first dust shielding operation can be set to be longer than that for each of subsequent dust shielding operations from the second dust shielding operation onward. Akio is distinguishable from claim 1, as amended, because there is no teaching or suggestion of a vibration time setting unit which is set to vibrate the optical member longer during a first photographing operation than subsequent photographing operations.

Accordingly, Applicant respectfully submits that independent claim 1 of the present invention, as amended, is distinguishable from Akio.

b. Independent Claim 5

Independent claim 5 of the present invention has been amended to include the limitations of claim 8, and recites, in pertinent part:

when the photographing-mode setting unit selects a single-shot photographing mode, the operation-prohibiting unit permits the vibration member to operate each time a photographing operation is performed, and when the photographing-mode setting unit selects a continuous photographing mode, the operation-prohibiting unit permits the operation-prohibiting unit to operate only at a first photographing, and prohibits the vibration member from operating at subsequent photographing from a second photographing onward.

Akio is distinguishable from independent claim 5 of the present invention because there is no teaching or suggestion of a continuous photographing mode and a single-shot photographing mode as the applicable photographing modes, each of which have distinguishable vibration operation intervals as in the present invention. Enclosed as Exhibit "A" to this Reply is an English translation of paragraphs [0015] – [0019] of Akio, which disclose the modes of dust removal operation in Akio. Akio

discloses modes of operation: (1) automatic removal mode; (2) manual removal mode; and (3) dust removal prohibition mode. The Office Action relies on a combination of the manual removal mode and dust removal prohibition mode as disclosing the dust removal operation of the present invention in the continuous photographing mode. See Office Action at pg. 6. The present invention is distinguishable because the continuous photographing mode of the present invention is a single mode, and the Office Action relies on a combination of the distinct manual removal and dust removal prohibition modes of Akio in support of this rejection.

Akio is further distinguishable because it does not teach or suggest a continuous photographing operation/mode and a single-shot photographing mode as recited in claim 5. Thus, there is no teaching or suggestion in Akio of associating the dust removal operation with a photographing mode.

Accordingly, Applicant respectfully submits that independent claim 5 of the present invention, as amended, is distinguishable from Akio.

c. Independent Claim 9

Independent claim 9 of the present invention recites, in pertinent part:

a vibration member which vibrates the optical member for a predetermined time;

a photographing-condition setting unit which sets a photographing condition; and

a vibration-time changing unit which changes the predetermined time for which the vibration member vibrates the optical member, in accordance with the photographing condition set by the photographing-condition setting unit

Akio is distinguishable from claim 9, as amended, because there is no teaching or suggestion of a vibration-time changing unit which changes the predetermined time for which the vibration member vibrates the optical member, in accordance with the photographing condition set by the photographing-condition setting unit. In addition, as discussed above, Akio does not teach or suggest associating the dust removal operation with a photographing condition/mode.

Accordingly, Applicant respectfully submits that independent claim 9 of the present invention, as amended, is distinguishable from Akio.

d. Independent Claim 14

Independent claim 14 of the present invention is distinguishable from Akio, because Akio does not teach or suggest that dust removal is performed during the exposure operation of the imaging element.

Independent claim 14 is directed to operation of the vibration member during the exposure operation (*i.e.* before exposure or during exposure). As discussed above, Akio does not teach or suggest associating the dust removal operation with a photographing condition/mode, and in particular during an exposure operation.

Accordingly, Applicant respectfully submits that independent claim 14 of the present invention, as amended, is distinguishable from Akio.

2. 35 U.S.C. § 103(a) (Akio in view of Mizutani)

Claims 2, 7, and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Akio in view of U.S. Patent No. 7,095,982 (Mizutani). Based on the

foregoing claim amendments, this rejection is moot with respect to cancelled claims 2 and 7, and is believed to apply only to pending claim 12, which has been amended to include the limitations of original claim 13.

Independent claim 12 of the present invention recites, in pertinent part, that the imager apparatus includes “an operation-timing setting unit which sets a timing at which the vibration member is operated, in accordance with the photographing condition set by the photographing-condition setting unit, wherein the photographing-condition setting unit sets exposure time or selects an exposure operation in a bulb state.” Thus, independent claim 12 is directed to operation of the vibration member during the exposure operation (*i.e.* before exposure or during exposure).

Neither Akio nor Mizutani teach or suggest bulb photographing. One of ordinary skill in the art would recognize that bulb photographing refers to an operation for maintaining exposure when the release switch is in the ON state.¹ It appears that the Office Action confuses the term “bulb” as recited in this claim for a flash bulb. Thus, the flash photographing mode disclosed in Mizutani is distinguishable from the “bulb” photographing of the present invention.

In addition, neither reference discloses that dust removal is carried out in accordance with the photographing condition set by the photographing-condition setting unit as recited in claim 12.

¹ For exemplary purposes, claim 1 of U.S. Patent No. 5,754,894 and claim 3 of U.S. Patent No. 4,812,870 refer to the term “bulb” in a similar manner.

Accordingly, Applicant respectfully submits that independent claim 12 of the present invention, as amended, is distinguishable from Akio and Mizutani, alone or in combination.

3. 35 U.S.C. § 103(a) (Akio in view of Kawai)

Claims 3, 4, 11, and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Akio in view of U.S. Patent No. 7,006,138 (Kawai). Based on the foregoing claim amendments, this rejection is moot with respect to cancelled claims 3, 4, and 11, and is believed to apply only to pending claim 15, which has been amended to include the limitations of original claim 12.

Independent claim 15 of the present invention is directed to intermittent operation of the vibration member during the exposure operation (*i.e.* before exposure or during exposure) of the imaging element. Neither Akio nor Kawai teach or suggest associating the dust removal operation with a photographing condition/mode, and in particular during an exposure operation as recited in claim 15.

Accordingly, Applicant respectfully submits that independent claim 14 of the present invention, as amended, is distinguishable from Akio.

4. 35 U.S.C. § 103(a) (Akio in view of Kaneda)

Claim 6 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Akio in view of U.S. Patent No. 5,633,756 (Kaneda). Based on the cancellation of claim 6, this rejection should be moot.

5. 35 U.S.C. § 103(a) (Akio in view of Rouvinen)

Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Akio in view of U.S. Patent Pub. No. 2003/0227559 (Rouvinen). Based on the foregoing claim amendments, it is believed that this rejection applies to pending claim 16 (which substantially combines original claims 9 and 10).

Independent claim 16 of the present invention recites, in pertinent part, that the imager apparatus includes “a vibration-time changing unit which changes the predetermined time for which the vibration member vibrates the optical member, in accordance with the photographing condition set by the photographing-condition setting unit, wherein the vibration-time changing unit increases the predetermined time, when the photographing-condition setting unit sets a high resolution as a resolution for images to be photographed.”

Neither Akio nor Rouvinen teach or suggest that the predetermined time for which the vibrating member vibrates the optical member is carried out in accordance with the photographing condition set by the photographing-condition setting unit as recited in claim 16. In addition, neither reference teaches or suggests increasing the pre-determined time when the photographing-condition setting unit sets a high resolution.

Accordingly, Applicant respectfully submits that independent claim 16 of the present invention, as amended, is distinguishable from Akio.

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Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the present application, including claims 1, 5, 9, 12, and 14-16, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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Enclosures

EXHIBIT “A”

**Partial Translation of
JP 07-151946 (Akio)**

Partial Translation of Akio

The following is an English translation of paragraphs [0015] to [0019] of Akio:

[0015] FIG. 9 is a block diagram of camera 1 according to the embodiment shown in FIG. 1 also, and in particular a main portion around a lens barrel of the camera. As shown in the figure, at protection glass 2 provided at a front surface of the lens barrel, ultrasonic oscillator 2 is attached. Further, focus lens 3 can be driven forwards and backwards by focus motor 42 formed of an ultrasonic motor. The above ultrasonic oscillator 15 and focus motor 42 are driven by control section 11 using driving section 41. At protection glass 2, dust sensor 13 for detecting adhesion of dust, waterdrop or the like is provided. When a waterdrop or dust adheres to protection glass 2, the electric resistance of dust sensor 13 is reduced, and adhesion of the dust is detected at control section 11.

[0016] Furthermore, when a group of switches 11a connected to control section 11 are operated, one of the following modes can be selected: an automatic removal mode in which dust or the like adhering to protection glass 2 is automatically removed; a manual removal mode in which ultrasonic oscillator 15 is turned on by manual operation to remove dust or the like; and a dust removal prohibition mode in which ultrasonic oscillator 15 is turned off.

[0017] FIG. 10 is a flowchart of a dust removal processing of the above camera 1. As shown in the figure, first, in step S31, the states of switches 11 are checked. When the automatic dust removal mode is specified, the step to be carried out proceeds to step S32, and the adhesion state of dust is checked based on the output of dust sensor 13. When it indicates that dust adheres, the step proceeds to step S33. When it indicates that dust does not adhere, the step jumps to step S35, and ultrasonic oscillator 15 is turned off, thereby ending the routine.

[0018] Further, in checking in the above step S31, it is determined that the switches are in the ON state, and the manual dust removal mode is specified, the step directly proceeds to step S33 which will be described later. Furthermore, when it is determined that the switches are in the OFF state, and the dust removal prohibition mode is specified, the step jumps to step S35, and ultrasonic oscillator 15 is turned off, thereby ending the routine.

[0019] In the case where the step proceeds to the above step S33, it is checked whether focus motor 42 is being driven or not. In the case where focus motor 42 is being driven, since driving section 41 is applied to both driving of ultrasonic oscillator 15 and that of focus motor 42, the step jumps to step S35, and ultrasonic oscillator 15 is turned off, thereby ending the routine. On the other hand, when focus motor 42 is not being driven, the step proceeds to step S34, and driving of ultrasonic oscillator 15 is started, and removal of dust is carried out.